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## RESEARCH REPORTS

SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

**Title:** The effects of fertilization and water management on growth and production of Nile tilapia in deep ponds during the dry season

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**Abstract:** Fertilization guidelines developed for shallow ponds (1 m) with controlled depths were tested in deeper (2.5 m) ponds to determine effectiveness of these guidelines for culture of Nile tilapia *Oreochromis niloticus*. Twelve ponds of 2.5-m depth were used in four treatments: (A) weekly fertilization with water addition; (B) weekly fertilization without water addition; (C) one early fertilization without water addition; and (D) fertilization frequency dependent on nutrient concentrations, without water addition. Sex-reversed Nile tilapia were stocked at 2 fish/m<sup>2</sup> with an initial weight of 15 g, and harvested after 234 d. Depth of water declined from 2.4 m to 1.6 m over the experiment in ponds without water addition. Fish growth rate was significantly higher in treatments A and B (0.86 g/d), than in other treatments, as was yield (3,830 kg/ha). Treatment C was lowest in growth (0.086 g/d) and yield (168 kg/ha), with treatment D intermediate. Fish growth rates and yields were strongly correlated to manure input ( $R^2 = 0.89$  and  $0.94$ , respectively), and residuals were not correlated to any physical or chemical variables. Growth and yield in these deep ponds were somewhat lower than those in previous experiments for shallow ponds with regular water inputs. However, stagnant ponds did not accumulate nutrients and metabolites at rates higher than ponds with controlled water depths.

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